

What is claimed is:

1. A filter system, comprising:

(a) an extended surface area substrate;

5 (b) a first impregnant comprising tungsten-containing material provided on the substrate in an amount effective to help provide the filter medium with a filtering efficacy against an HCN contaminant;

(c) a second impregnant on the substrate in an amount effective to help provide the filter medium with a filtering efficacy against a basic contaminant; and

10 (d) a third impregnant on the substrate in an amount effective to help provide the filter medium with a filtering efficacy against an acidic contaminant.

2. The filter system of claim 1, wherein the substrate comprises a plurality of filter medium particles.

15 3. The filter system of claim 1, wherein the second impregnant is acidic and the third impregnant is basic.

4. The filter system of claim 1, wherein the second impregnant comprises an
20 acidic, sulfate-containing material.

5. The filter system of claim 1, wherein the second impregnant comprises a bisulfate constituent.

25 6. The filter system of claim 1, wherein the third impregnant comprises a copper-containing material.

7. The filter system of claim 6, wherein the copper-containing material
30 comprises a copper oxide.

8. The filter system of claim 1, wherein the tungsten containing material comprises a tungsten oxide constituent.

9. The filter system of claim 1, wherein the tungsten containing material is
5 derived from ingredients comprising a meta tungstate.

10. The filter system of claim 1, wherein the tungsten containing material is derived from ingredients comprising a para tungstate.

11. The filter system of claim 1, further comprising a Zn containing material
10 impregnated onto the substrate.

12. The filter system of claim 1, further comprising a molybdenum containing material impregnated onto the substrate.

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13. The filter system of claim 2, wherein the filter medium particles are substantially free of molybdenum-containing material.

14. The filter system of claim 2, wherein the filter medium particles are
20 substantially free of vanadium-containing material.

15. The filter system of claim 2, wherein the filter medium particles are substantially free of chromium-containing material.

16. The filter system of claim 1 further comprising a vanadium containing
25 material impregnated onto the substrate.

17. The filter system of claim 2, wherein said filter medium particles are incorporated into a first filter bed, wherein said filter system comprises a second filter bed comprising a second plurality of filter medium particles, and wherein the first and second filter beds are operatively positioned in the filter system such that a fluid medium
5 conveyed through the system contacts each filter bed.

18. The filter system of claim 17, wherein the second filter bed comprises a Class B filter medium and is positioned upstream from the first filter bed.

10 19. The filter system of claim 2, wherein the filter medium particles comprise a plurality of coconut-based carbon particles.

20. The filter system of claim 2, wherein the filter medium particles comprise a plurality of coal-based carbon particles.
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21. The filter system of claim 2, wherein the filter medium particles comprise at least two of coal-based carbon particles, coconut-based carbon particles, and peat-based carbon particles.

20 22. The filter system of claim 1, wherein the substrate further comprise an amine that is a solid at 25°C and 1 atm of pressure.

23. The filter system of claim 22, wherein the amine comprises TEDA.

25 24. The filter system of claim 1, wherein the substrate is at least partially vacuum dried.

25. The filter system of claim 2, wherein the filter medium particles are substantially free of chromium-containing material.
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26. The filter system of claim 2, wherein the filter medium particles are substantially free of chromium-containing material and molybdenum-containing material.

27. A filter medium comprising:

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(a) a substrate;

(b) a copper-containing impregnant provided on the substrate in an amount effective to help provide the filter medium with a filtering efficacy against an acidic contaminant;

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(c) a tungsten-containing impregnant provided on the substrate in an amount effective to help provide the filter medium with a filtering efficacy against an HCN contaminant; and

(d) an acidic, sulfate-containing impregnant provided on the substrate in an amount effective to help provide the filter medium with a filtering efficacy against a basic contaminant.

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28. The filter medium of claim 27, wherein the substrate comprises a plurality of substrate particles and wherein the moles of tungsten-containing impregnant per gram of substrate particles is less than about 0.025.

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29. A method of making a filter medium, comprising the steps of:

(a) causing ingredients comprising singly or in combination a carbonate, a sulfate, a basic material, a copper-containing material, and a tungsten-containing material to be incorporated into one or more admixtures, wherein at least one of the ingredients comprises an ammonium constituent;

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(b) causing the one or more admixtures to impregnatingly contact a substrate, whereby an impregnated substrate is formed;

(c) drying the impregnated substrate, wherein at least a portion of the drying occurs in a vacuum and at least a portion of the drying occurs at a temperature sufficiently high such that an acidic sulfate compound is formed on the substrate in situ.

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30. The method of claim 29, wherein at least a portion of the carbonate comprises ammonium carbonate.

31. The method of claim 29, wherein at least a portion of the sulfate comprises ammonium sulfate.

32. The method of claim 24, wherein at least a portion of the basic material comprises aqueous ammonia.

33. The method of claim 29, wherein at least a portion of the tungsten containing material comprises ammonium tungstate.

34. The method of claim 29, wherein at least a portion of the tungsten containing material comprises ammonium meta tungstate.

35. The method of claim 29, wherein at least a portion of the tungsten containing material comprises ammonium para tungstate.

36. The method of claim 29, wherein the substrate comprises a plurality of substrate particles and wherein the tungsten-containing material is present in an amount such that the moles of tungsten in the tungsten-containing material per gram of substrate particles is less than about 0.015.

37. A method of making a filter medium, comprising the steps of:

(a) providing information indicative of how organic vapor performance of a filter medium correlates to an amount of HCN-removing impregnant provided on the filter medium; and

(b) using the information to make a filter medium comprising an amount of the HCN-removing impregnant.

38. A method of making a filter medium, comprising the steps of:
providing information indicative of the efficacy of an HCN-removing impregnant
as a function of the moles of the agent used per unit of a substrate; and
using the information to make a filter medium comprising an amount of the HCN-
5 removing impregnant impregnated onto the substrate.